1854MNRAS..14..168.

year with our meridian circle. A part of the work is already done."

The following is the programme alluded to by M. Otto Struve:—

Programme of a Prize for Astronomy proposed by the Imperial Academy of Sciences of St. Petersburg, at their Sitting on the 29th of March, 1853.

The disruption of the comet of Biela into two bodies apparently separated by an empty space is a unique event in the annals of astronomy. This catastrophe, which occurred in 1846, almost under the eyes of astronomers, has been followed by extraordinary changes in the aspect and brightness of the two heads. Analogous changes were again exhibited on the occasion of the return of the comet in 1852, notwithstanding the considerable augmentation of the mutual distance of the two heads. They indicate, according to all appearance, the continued existence of a mutual action of a very remarkable character. All these circumstances concur to render the comet of Biela an object of the very highest scientific interest. Further, it is to be remarked that, on the occasion of the last apparition of the comet in 1852, the observed positions have differed enormously from the ephemeris calculated beforehand by Sig. Santini, and that it is not yet decided whether the differences between theory and observation ought to be attributed solely to the imperfect nature of the calculations, or whether they have been produced by forces which, at the time of the subdivision of the comet, had effected violent alterations in the orbit. Consequently, a vigorous investigation of the orbit of the comet has appeared to the Imperial Academy of Sciences to be worthy of being proposed to the competition of astronomers and geometers, as the subject of an extraordinary prize. Considering that it is impossible, under present circumstances, to foresee all the consequences to which the researches will lead, the Academy does not think that it would be desirable to restrict too rigorously the problem proposed for solution.

The programme is accordingly comprised in the following points:—

1. The Academy demands a rigorous investigation of the elements of the orbit described by the centre of gravity of the comet of Biela; which must be founded on a minute discussion of all the observations obtained during the six apparitions observed between 1772 and 1852, respect being had to the sensible perturbations produced by the planets.

2. In case it may not be possible to represent in a satisfactory manner all the observations by means of a single orbit, it will be necessary to divide the investigation into two parts, one of which will embrace the observations from the earliest period down to the epoch of the separation of the two heads; the other will include all the observations made from that epoch down to the present time.

3. The investigation should be especially directed to the mutual relations of the two heads, in order to determine not only the posi-

1854MNRAS..14..169R

tion of the centre of gravity of the two heads, but also, if it be possible, the laws according to which the alterations of their relative positions are effected.

4. The memoir for competition ought to be accompanied by an ephemeris, calculated beforehand for the next apparition of the comet in 1859.

Considering the long and troublesome calculations which the complete solution of this problem will demand, the Academy fixes the 1st of August, 1857, as the term for presenting the memoirs destined for competition. The adjudication of the prize will take place at the public sitting of the same year.

The memoirs for competition may be written in Russian, Latin, French, German, or English. They are to be addressed anonymously, "*To the Imperial Academy of Sciences of St. Petersburg,*" but furnished with a motto. A sealed packet annexed bearing the same motto as the memoir will contain the name and address of the author. The memoir crowned will be published by the Academy, and the author will have fifty copies placed at his disposal. The packets of the unsuccessful memoirs will be burned, and the memoirs will be placed at the disposal of the authors.

The prize is fixed at 300 ducats of Holland.

There will be besides an *accessit* of 150 ducats of Holland.

Mr. Hind, the Foreign Secretary of the Society, has received a letter from M. C. Rümker, in which he begs the Society to accept his warmest thanks for the honour they have conferred on him in awarding him the gold medal of the Society. Dr. Lee has also received a letter from M. Rümker, in which the writer states that the Burgomaster and their High Worships the Senators and Aldermen of Hamburg, in consequence of the honour which the Royal Astronomical Society has thus conferred on the Director of their Observatory, have decreed to repair and enlarge the latter, and to mount it with a better revolving dome. They have also held out the hope of furnishing it with a larger equatoreal.

Mr. Guthrie, a gentleman residing near Bervie, N.B., wishes to call the attention of astronomers to a phenomenon which he states to have observed in the planet *Venus* a few years ago. On the occasion of the approach of the planet to its inferior conjunction, and when the crescent was very slender, Mr. Guthrie, while engaged in examining it with a Newtonian reflector of 5 inches aperture and a magnifying power of 144, was unexpectedly surprised by observing an annular fringe of light surrounding the dark side of the disk, and completing the circle which was partially formed by the outer margin of the crescent. The same appearance was observed when the planet was viewed with a Gregorian reflector of 3½ inches aperture, magnifying 68 times. In order to assure himself beyond doubt of the reality

1854MNRAS..14..170.

of the phenomenon, Mr. Guthrie directed some of his friends to examine the planet through his instruments, but without communicating to them a knowledge of the object he had in view; whereupon each of them remarked that he observed the same appearance. This luminous continuation of the cusps of the planet was observed on several consecutive nights, the atmosphere having been very favourable for observation. It increased in visibility as the crescent waned. The breadth was considerable: neither the interior nor the exterior side of it was sharply defined.

Mr. Guthrie states that the instruments with which the planet was examined were both of excellent quality. The fringe was better defined in the larger instrument than in the smaller; being of a nebulous appearance, it was more distinctly visible in the smaller than in the larger instrument.

Mr. Guthrie ascribes the luminous appearance above mentioned to the existence of an atmosphere about *Venus*. He was prevented by the unfavourable state of the weather from verifying the existence of the phenomenon on the occasion of the late inferior conjunction of the planet. It is well known that Schroëter observed a similar continuation of the cusps of the planet, although not so extensive as to form with the crescent a complete circle of light.

Astronomical Observations made at the Observatory of Cambridge.

By the Rev. James Challis, M.A., Plumian Professor of Astronomy and Experimental Philosophy in the University of Cambridge, and late Fellow of Trinity College. Vol. xvii. for the years 1846–7–8. 4to. Cambridge, 1854.

This volume contains the meridian observations with the transit and mural circle, and the occultations of stars by the moon, for the years 1846–7–8. The observations of comets and planets with the Northumberland equatoreal have been reserved for a separate publication.

The meridian observations of 1846 are confined to stars, with the exception of observations of the planet *Neptune* in the last quarter. In 1847 an effort was made to resume meridian observations of bodies of the solar system, and, accordingly, in that year the Sun, the Moon, *Jupiter*, *Saturn*, and *Uranus*, and the new planets, *Neptune*, *Flora*, *Iris*, and *Astræa*, were observed. But the pressure of the work with the Northumberland equatoreal in observing planets and comets rendered it necessary, after February 1848, to restrict the meridian observations of moving bodies to the newly-discovered planets. Of these *Flora*, *Metis*, *Hebe*, *Astræa*, and *Neptune*, were observed in 1848.

A large number of the stars observed in the three years were used for comparison in equatoreal observations. The rest are double stars in Struve's catalogues, moon-culminating stars, occultation-stars, stars whose places are imperfectly determined in the British Association Catalogue, and the stars observed for instrumental corrections.